Mastering Symfony

SensioLabs
Créateur de Symfony

Training program

I. Services

II. Console

III. Security

IV. Events

Services

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I. Introduction

II. Retrieve services

III. Dependency injection

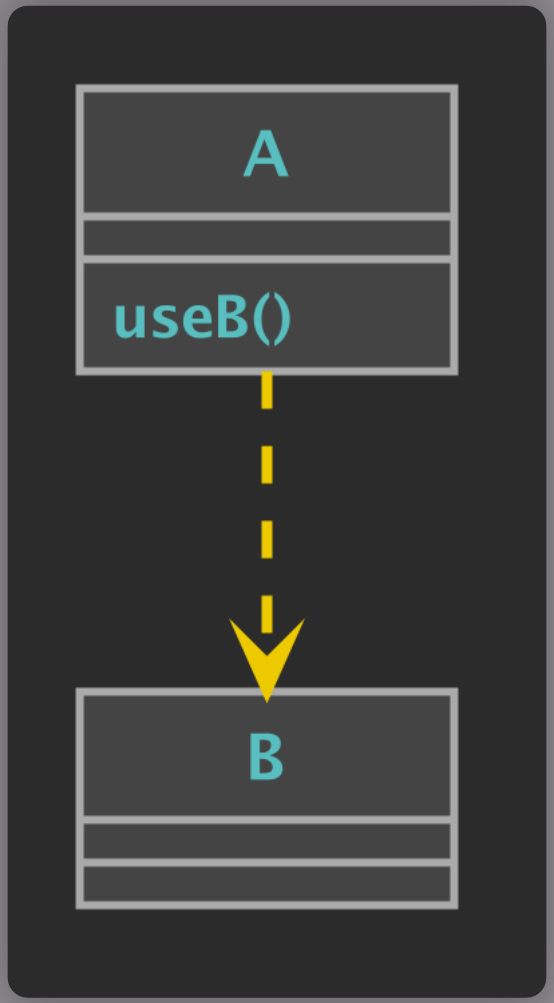
IV. Service configuration

Introduction

What are we talking about?

- Think about a logger…
- Do you configure it by yourself?
- What about a custom logger?
- How to provide it to a controller?

Dependency



About services

- Services are:
  - Configuration
  - Related to PHP classes
  - Handled by the Symfony DependencyInjection component
  - Descriptions of how to instantiate PHP classes
  - Most of the time already dynamically scanned by Symfony: no manual conf

Have a look

```php
/*
 * Assuming:
 *   - BookManager IS a custom service,
 *   - EntityManagerInterface IS a vendor service,
 * there is no need any configuration by default in Symfony
 * to provide the argument of the constructor.
 *
 * THIS is called autowiring.
 */
class BookManager
{
    /** @var \Doctrine\ORM\EntityManagerInterface */
    private $entityManager;

    public function __construct(EntityManagerInterface $entityManager)
    {
        $this->entityManager = $entityManager;
    }
}
```

Retrieve services

Useful commands

```
symfony console debug:autowiring --all
symfony console debug:autowiring mail

symfony console debug:container Symfony\Component\Mailer\MailerInterface
symfony console debug:container mailer.mailer
symfony console debug:container mailer.mailer --show-arguments
```

Dependency injection

How to get services

- Container:
  - Dynamic way to retrieve exposed services
  - $this->container->get('service_id')
- Autowiring:
  - Static and optimized way to inject services

Store dependencies in a service

- Constructor injection
- Setter injection
- Property injection

Autowiring in a constructor

```php
/*
 * Assuming:
 *   - BookManager IS a custom service,
 *   - EntityManagerInterface IS a vendor service,
 * there is no need any configuration by default in Symfony
 * to provide the argument of the constructor.
 *
 * THIS is called autowiring.
 */
class BookManager
{
    /** @var \Doctrine\ORM\EntityManagerInterface */
    private $entityManager;

    public function __construct(EntityManagerInterface $entityManager)
    {
        $this->entityManager = $entityManager;
    }
}
```

Autowiring in a setter

```php
class BookManager
{
    /** @var \Doctrine\ORM\EntityManagerInterface */
    private $entityManager;

    /**
     * @required
     */
    public function setEntityManager(EntityManagerInterface $entityManager): void
    {
        $this->entityManager = $entityManager;
    }
}
```

Autowiring in a property

```yaml
# config/services.yaml

services:
    App\BookManager:
        properties:
            manager: '@Doctrine\ORM\EntityManagerInterface'
```

```php
class BookManager
{
    /** @var \Doctrine\ORM\EntityManagerInterface  */
    private $entityManager;
}
```

Tips

- Rule 1: Use constructor injection whenever possible.
- Rule 2: Use setter injection for specific cases.
- Rule 3: Use property injection as a last resort.

Only for information

```php
<?php

// var/cache/dev/ContainerNpez2qb/getBookManagerService.php

use Symfony\Component\DependencyInjection\Argument\RewindableGenerator;

// This file has been auto-generated by the Symfony Dependency Injection Component for internal use.
// Returns the public 'App\BookManager' shared autowired service.

include_once $this->targetDirs[3].'/src/BookManager.php';

return $this->services['App\\BookManager'] = new \App\BookManager(
  ${($_ = isset($this->services['doctrine.orm.default_entity_manager']) ?
     $this->services['doctrine.orm.default_entity_manager'] :
     $this->load('getDoctrine_Orm_DefaultEntityManagerService.php')) && false ?: '_'}
);

```

Binding arguments

```yaml
services:
    _defaults:

        # additional context provided to autowired services
        bind:
            int $someValue: 10
```

Service configuration

Default configuration

```yaml
services:
    _defaults:
        autowire: true      # Automatically injects dependencies in your services.
        autoconfigure: true # Automatically registers your services as commands & event subscribers

    # Makes classes in src/ available to be used as services
    # this creates a service per class whose id is the fully-qualified class name
    App\:
        resource: '../src/*'
        exclude: '../src/{DependencyInjection,Entity,Migrations,Tests,Kernel.php}'

    # Controllers are imported separately to make sure services can be injected
    # as action arguments even if you don't extend any base controller class
    App\Controller\:
        resource: '../src/Controller'
        tags: ['controller.service_arguments']
```

Manual configuration

```yaml
services:
    app.book_manager:
        class: App\BookManager
        arguments:
            - '@doctrine.orm.default_entity_manager'
        public: false

    App\BookManager:
        alias: 'app.book_manager'
        public: false
```

Manual configuration

- But…

Best-practice

Use Autowiring to automate the configuration of application services

Environment variables

```
$ symfony console debug:container --env-var=SOME_KEY

Symfony Container Environment Variables
=======================================

 // Displaying detailed environment variable usage matching SOME_KEY

 None of the environment variables match this name.
```

Environment variables

```
# .env file (or any override such as .env.local)
# Set an environment variable if missing in the host

SOME_KEY='37fd4a3c83ab2'
```

```
# app/services.yaml

parameters:
    # Fallback if missing in your .env files
    env(SOME_KEY): 'aaaaaaaaaaaa'

services:
    App\Demo:
        arguments:
            $key: '%env(string:SOME_KEY)%'
```

Environment variables

```
$ symfony console debug:container --env-var=SOME_KEY

Symfony Container Environment Variables
=======================================

 // Displaying detailed environment variable usage matching SOME_KEY

%env(string:SOME_KEY)%
----------------------

 ----------------- ----------
  Default value     "aaaaaaaaaaaa"
  Real value        "37fd4a3c83ab2"
  Processed value   "37fd4a3c83ab2"
 ----------------- ----------

 // Note real values might be different between web and CLI.
```

Exercises

1. Retrieve and configure our OMDb API consumer.
2. Create a new service to fetch movie data from the API.

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Resources

https://symfony.com/doc/current/service_container.html

https://symfony.com/doc/current/configuration/env_var_processors.html

Console

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Training program

I. Context

II. Custom commands

III. Helpers

Context

Context

- Many use cases:
  - Create some code snippets
  - Get stats about the project
  - I/O on the database
  - Sync data
  - . . .

Features

- Modes:
  - Interactive
  - Batch
- Support:
  - Debug stages
  - Kernel and app access
  - Specific events
  - Helpers
  - Test kit
- Remember: The Command class IS a service

Usage

```
$ symfony console help

Description:
  Displays help for a command

Usage:
  help [options] [--] <command> [<command_name>]

Arguments:
  command               The command to execute
  command_name          The command name [default: "help"]

Options:
      --format=FORMAT   The output format (txt, xml, json, or md) [default: "txt"]
      --raw             To output raw command help
  -h, --help            Display this help message
  -q, --quiet           Do not output any message
  -V, --version         Display this application version
      --ansi            Force ANSI output
      --no-ansi         Disable ANSI output
  -n, --no-interaction  Do not ask any interactive question
  -e, --env=ENV         The Environment name. [default: "dev"]
      --no-debug        Switches off debug mode.
  -v|vv|vvv, --verbose  Increase the verbosity of messages: 1 for normal output, 2 for more verbose
output and 3 for debug

```

Custom commands

New empty command

```php
<?php

namespace App\Command;

use Symfony\Component\Console\Command\Command;
use Symfony\Component\Console\Input\InputInterface;
use Symfony\Component\Console\Output\OutputInterface;

class BookFindCommand extends Command
{

    protected function configure(): void
    {
        $this
            ->setName('app:book:find')
        ;
    }

    protected function execute(InputInterface $input, OutputInterface $output): int
    {
        return 0;
    }
}

```

Use the command

```
1 $ symfony console app:book:find
```

Configuration

```
1     protected function configure(): void
2     {
3         $this
4             ->setName('app:book:find')
5             ->setAliases(['book:find'])
6             ->setDescription('Find a book by isbn')
7             ->setHelp('...')
8         ;
9     }
```

Options and arguments

- Each command can have:
  - Arguments
  - Options:
    - Long options: --help
    - Short options: --h
    - Combined short options: -abc (equivalent to: -a -b -c)
- Values can be given:
  - When calling the command
  - Interactively during the command process

Arguments

```php
protected function configure(): void
{
    $this
        ->setName('app:book:find')
        ->addArgument('isbn', InputArgument::REQUIRED, 'ISBN code required to retrieve a book')
    ;
}

protected function execute(InputInterface $input, OutputInterface $output): int
{
    $output->writeln('ISBN: ' . $input->getArgument('isbn'));

    return 0;
}
```

Arguments: usage

```
$ symfony console app:book:find

  Not enough arguments (missing: "isbn").

app:book:find [-h|--help] [-q|--quiet] [-v|vv|vvv|--verbose] [-V|--version] [--ansi] [--no-ansi] [-n|--no-interaction] [-e|--env ENV] [--no-debug] [--] <command> <isbn>

exit status 1


$ symfony console app:book:find "2-266-11151-5"
ISBN: 2-266-11151-5
```

Modes

- Argument modes:
  - InputArgument::REQUIRED
  - InputArgument::OPTIONAL
  - InputArgument::IS_ARRAY
- Option modes:
  - InputOption::VALUE_REQUIRED
  - InputOption::VALUE_OPTIONAL
  - InputOption::VALUE_NONE
  - InputOption::VALUE_IS_ARRAY

Helpers

About helpers

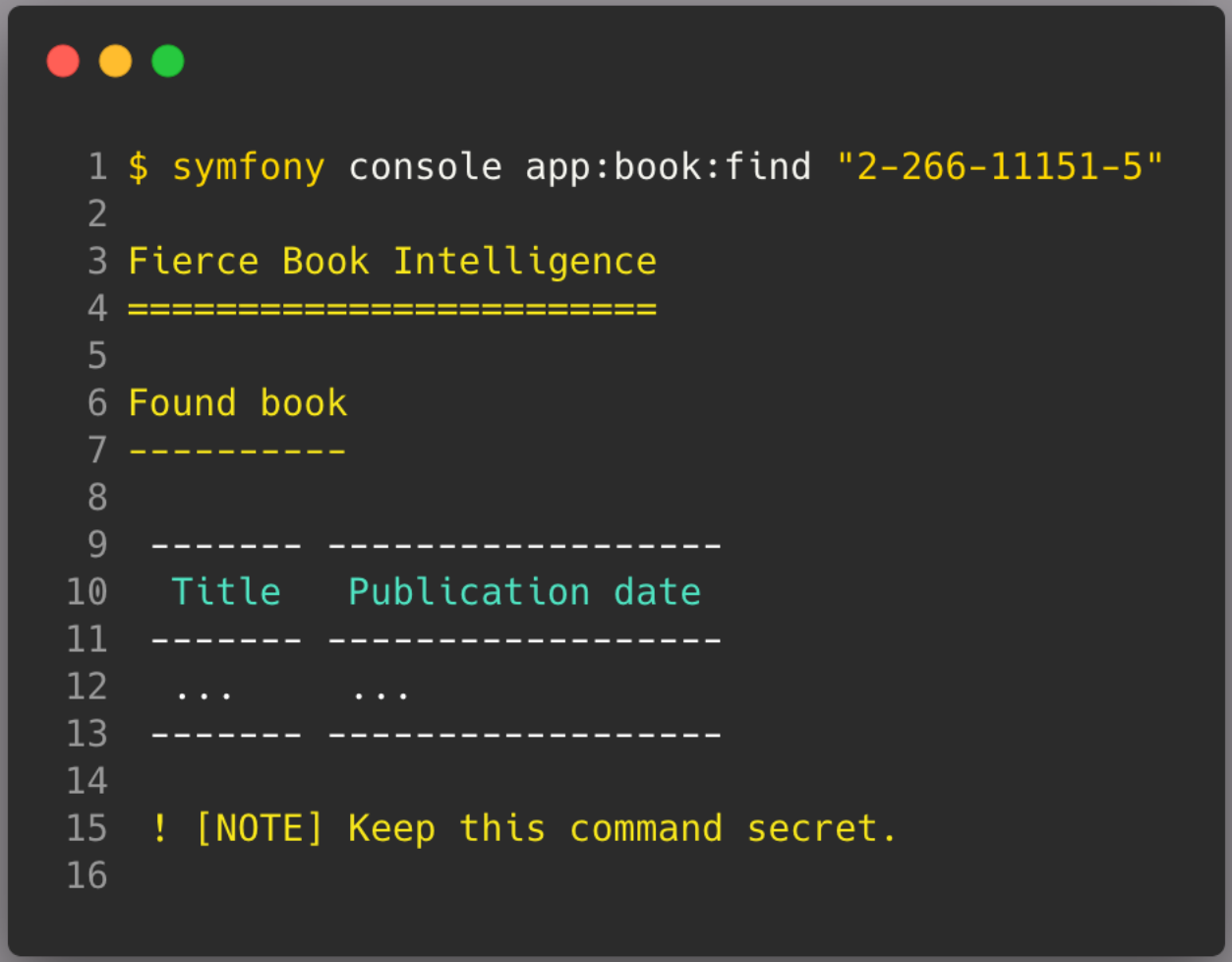
- Many helpers
- One meta-helper: SymfonyStyle

SymfonyStyle

```php
protected function execute(InputInterface $input, OutputInterface $output): int
{
    $io = new SymfonyStyle($input, $output);
    $io->title('Fierce Book Intelligence');

    $io->section('Found book');
    $io->table([
        'Title',
        'Publication date',
    ], [
        ['...', '...']
    ]);

    $io->note('Keep this command secret.');

    return 0;
}
```

See more: https://symfony.com/doc/current/console/style.html

SymfonyStyle - Output



```
$ symfony console app:book:find "2-266-11151-5"

Fierce Book Intelligence
========================

Found book
----------

 ------- ------------------
  Title   Publication date
 ------- ------------------
  ...     ...
 ------- ------------------

 ! [NOTE] Keep this command secret.

```

Fine tuned helpers

- Many helpers:
  - Question helper
  - Table
  - Progress bar
  - Process helper
  - Formatter helper
  - Debug formatter helper

See more: https://symfony.com/doc/current/components/console/helpers/index.html

Exercises

1. Create a new command to perform a data import for OMDB API into our database.
    1. The command will ask for either a OMBD id or a movie title
    2. The command will display the steps processed, and the movie information once imported, such as:
        1. ids (the one from the API and ours from the database)
        2. title
        3. MPAA restriction (Movie::rated)

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Resources

https://symfony.com/doc/current/console.html

Security

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Training program

I. Introduction

II. Authentication and Guard

III. Native authorization with roles

IV. Custom voters

Introduction

Keywords

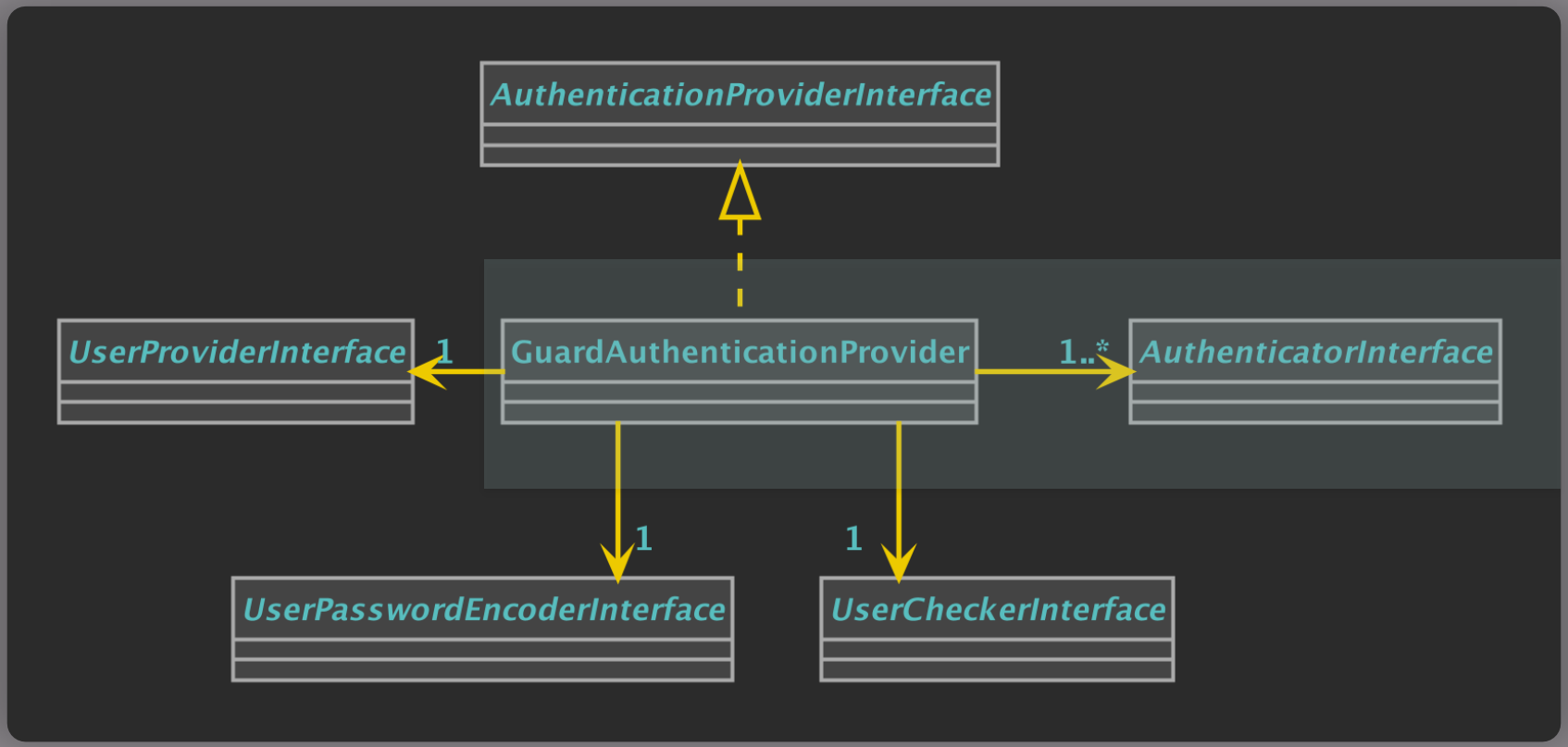
- 2 layers:
  - Authentication: Who is the user?
  - Authorization: According to the user's profile, does he pass some conditions?
- Authentication:
  - User provider: Users stored in the system
  - Authentication providers: Way to retrieve user profiles into tokens
- Authorization:
  - AccessDecisionManager: Referee of the voting system
  - Voters: Services that answer (yes, no, no idea) to a given question
- Firewall
- Helpers (See later)

Authentication and Guard

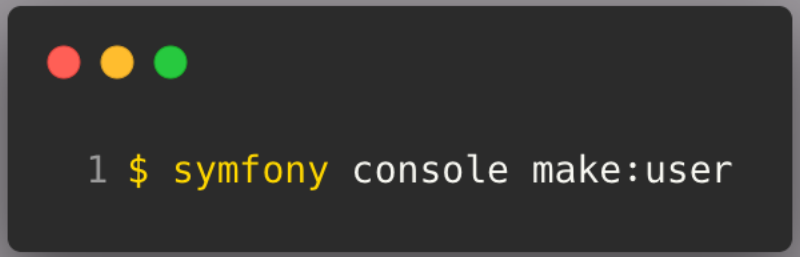
Authentication

- Authentication providers:
  - Built-in:
    - Form login (LDAP or not)
    - Json login
    - HTTP Basic
    - . . .
  - Custom:
    - GuardAuthenticationProvider: Allows you to have custom authenticators

Guard


AuthenticationProviderInterface
UserProviderInterface
1
GuardAuthenticationProvider
1..*
AuthenticatorInterface
1
1
UserPasswordEncoderInterface
UserCheckerInterface

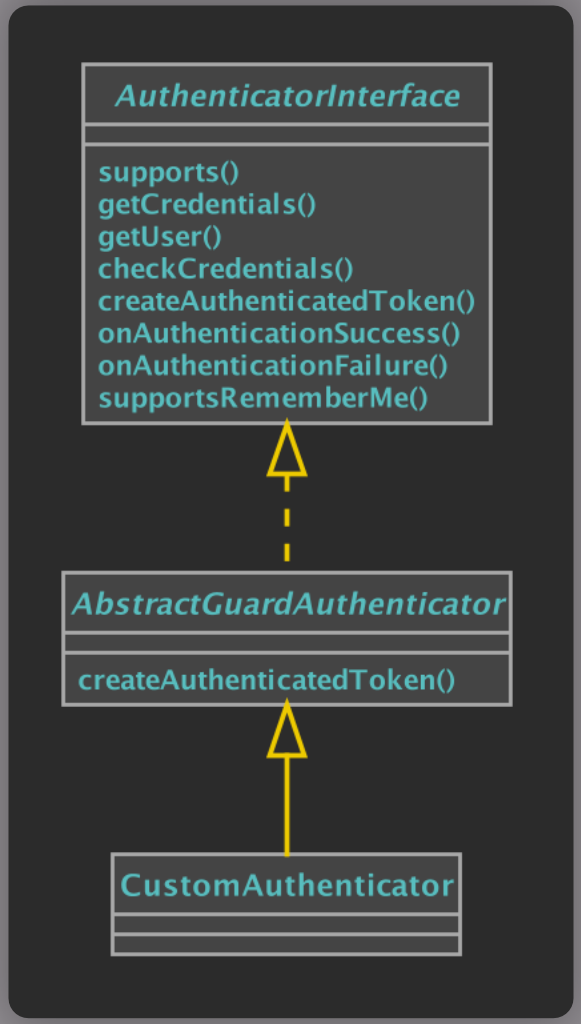
User model



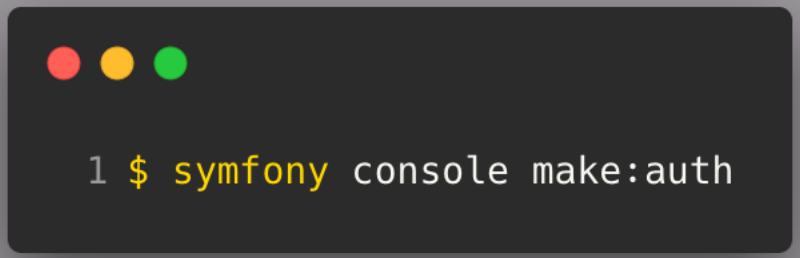
User provider

```yaml
# config/packages/security.yaml

# make:user updated this file (assuming we chose Doctrine as storage)
# Have a look on src/Entity/User.php as well 🤷

security:
    encoders:
        App\Entity\User:
            algorithm: auto

    # https://symfony.com/doc/current/security.html#where-do-users-come-from-user-providers
    providers:
        app_user_provider:
            entity:
                class: App\Entity\User
                property: email
```

Authenticators



Custom authenticator



Configuration

```yaml
# config/packages/security.yaml

# On the "main" firewall,
#  make:user specified which user provider to choose
#  make:auth added our custom authenticator

firewalls:
    main:
        anonymous: lazy
        provider: app_user_provider
        guard:
            authenticators:
                - App\Security\MainAuthenticator
        logout:
            path: app_logout
```

Update your custom authenticator

- Open and edit your fresh authenticator
  - Located in src/Security

Native authorization with roles

How to check authorization?

- For each matching request:
  - See access_control in your security.yaml file
- Before calling a controller:
  - See @IsGranted() annotation
- In a controller:
  - See $this->isGranted(), or $this->denyUnlessGranted()
- In a service:
  - See AuthorizationChecker::isGranted(), or Security::isGranted()
- In a template:
  - See is_granted() function

What to check?

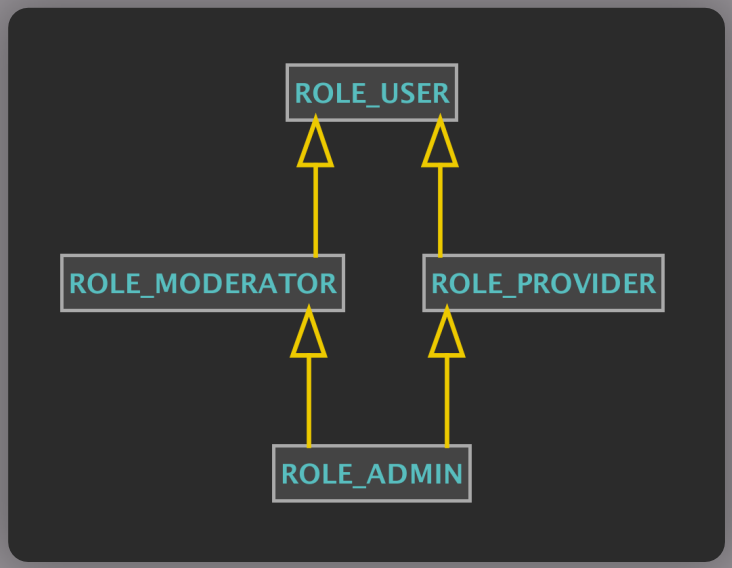
- Roles, by default: ROLE_XXXXXX
  - Role names are totally free, but are prefixed by ROLE_
- Operations on a given subject: (“Custom voters” chapter)
  - For example: { publish ; $book }

How to answer?

- Thanks to voters
- Built-in voters such as:
  - RoleVoter
  - RoleHierarchyVoter
- Custom voters

Roles - Hierarchy

```yaml
# config/packages/security.yaml

security:
    role_hierarchy:
        ROLE_USER: ~
        ROLE_MODERATOR: ROLE_USER
        ROLE_PROVIDER: ROLE_USER
        ROLE_ADMIN:
            - ROLE_MODERATOR
            - ROLE_PROVIDER

```



Roles - Storage

- UserInterface::getRoles(): array

Access control

```yaml
# config/packages/security.yaml

security:
    access_control:
        - { path: ^/admin, roles: ROLE_ADMIN }
        - { path: ^/profile, roles: ROLE_USER }

```

See more: https://symfony.com/doc/current/security/access_control.html

Controller and authorization

```php
// . . .
use Sensio\Bundle\FrameworkExtraBundle\Configuration\IsGranted;

class BookController extends AbstractController
{
    /**
     * @Route("/book/{book}", name="book_update", methods={"GET"})
     * @IsGranted("ROLE_USER")
     */
    public function update(Request $request, Book $book): Response
    {
        dump($this->isGranted('ROLE_USER'));

        $this->denyAccessUnlessGranted('ROLE_USER');

        // . . .
    }
}

```

Service and authorization

```php
class BookService
{
    private $authorizationChecker;

    public function __construct(AuthorizationCheckerInterface $authorizationChecker)
    {
        $this->authorizationChecker = $authorizationChecker;
    }

    public function doSomeAdminTask(): void
    {
        if (!$this->authorizationChecker->isGranted('ROLE_ADMIN') {
            // . . .
        }
    }
}

```

Template and authorization

```twig
{% if is_granted('ROLE_USER') %}
    <div>Welcome, {{ app.user.firstname }}</div>
{% endif %}
```

Custom voters

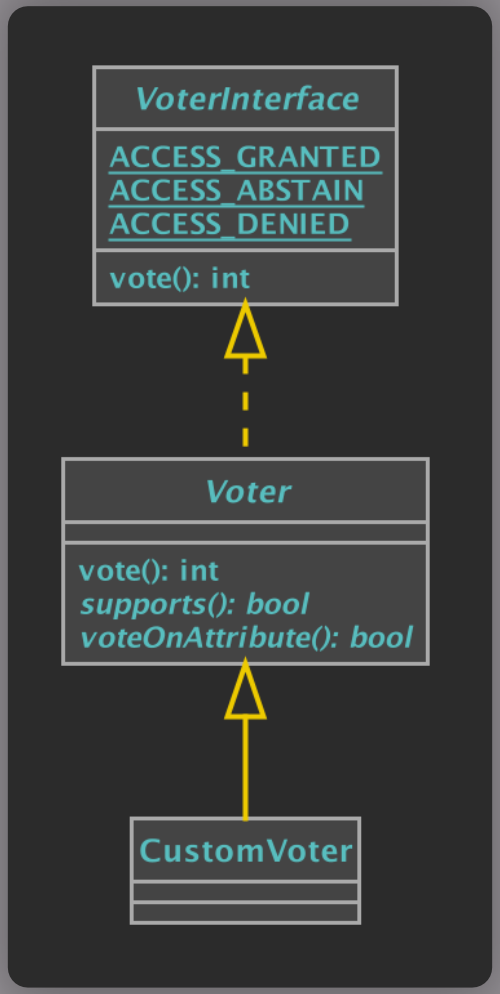
Context

```php
class BookController extends AbstractController
{
    /**
     * @Route("/book/{book}", name="book_update", methods={"GET"})
     */
    public function update(Request $request, Book $book): Response
    {
        $this->denyAccessUnlessGranted('update', $book);

        // . . .
    }
}

```

How to answer?

- By default, no voters can answer yes or no to the question with:
  - Attributes: ‘update’
  - Subject: $book
- By default, the app will finally answer “no”
- Let’s create a voter, then!

Voter


VoterInterface
ACCESS_GRANTED
ACCESS_ABSTAIN
ACCESS_DENIED
vote(): int
Voter
vote(): int
supports(): bool
voteOnAttribute(): bool
CustomVoter

New voter

```
1 $ symfony console make:voter
```

See more: https://symfony.com/doc/current/security/voters.html

Exercises

1. Create a custom Guard authenticator based upon a User managed by Doctrine.
2. Filter users so that only administrators can access ^/admin URLs.
3. Ensure a customer cannot order a movie if he doesn't meet age requirements.

The MPAA defines the following movie restrictions:
- "PG", "PG-13" require 13 y.o. to watch the movie
- "R", "NC-17" require 17 y.o. to watch the movie

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https://symfony.com/doc/current/security.html

https://symfony.com/doc/current/components/security/authentication.html

https://symfony.com/doc/current/security/auth_providers.html

https://symfony.com/doc/current/security/guard_authentication.html

https://symfony.com/doc/current/security/voters.html

Events

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Training program

I. Introduction

II. Subscribers

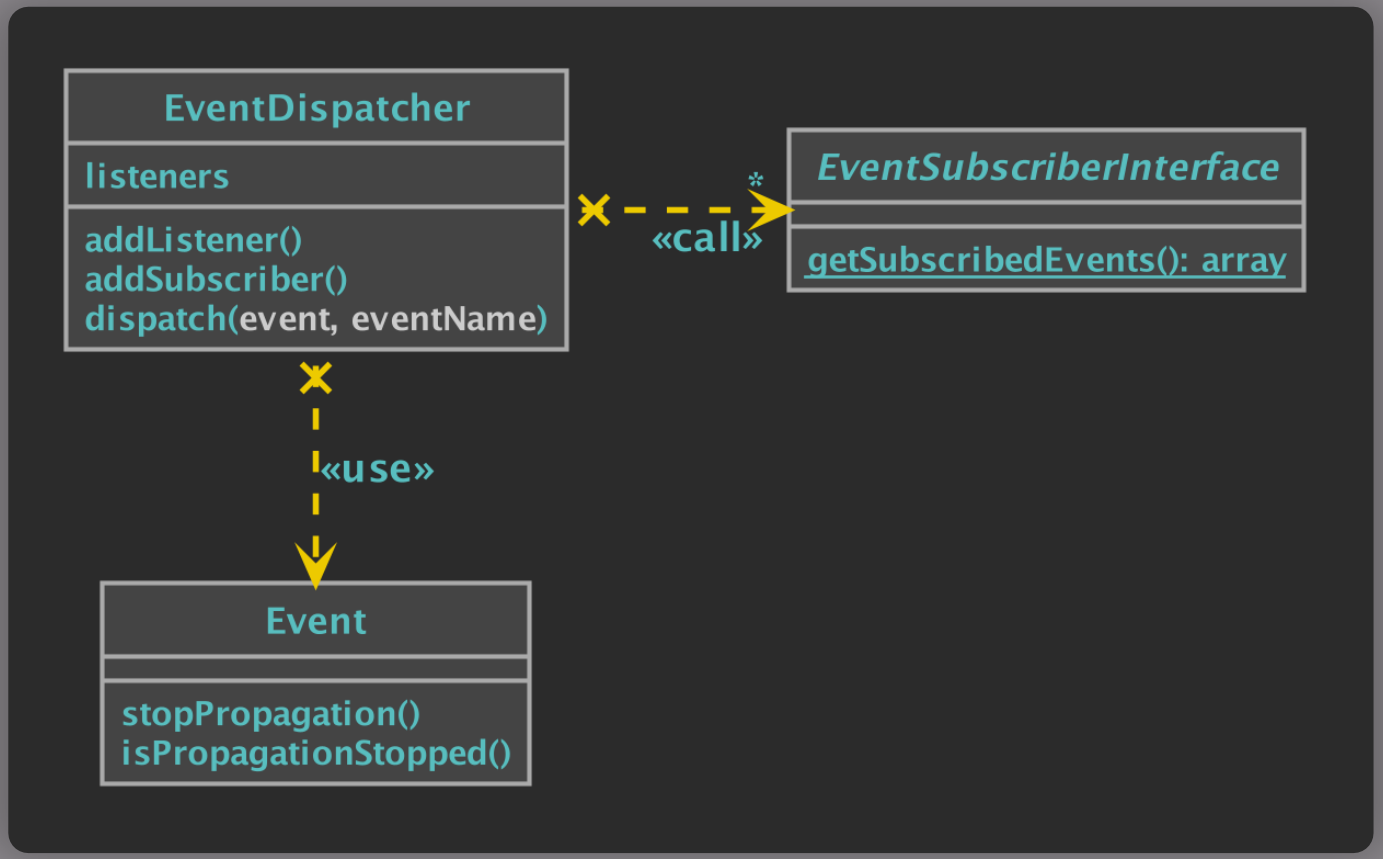
III. Events

Introduction

What are we talking about?

- Pluggable behavior of an algorithm
- Triggered events on observed actions:
  - Retrieve navigation data before rendering a menu
  - Automatically look for the user locale
  - . . .

Overview


EventDispatcher
listeners
addListener()
addSubscriber()
dispatch(event, eventName)
«call»
*
EventSubscriberInterface
getSubscribedEvents(): array
«use»
Event
stopPropagation()
isPropagationStopped()

Listeners

```
$ symfony console debug:event-dispatcher

Registered Listeners Grouped by Event
=====================================

"Symfony\Component\Mailer\Event\MessageEvent" event
---------------------------------------------------

 ------- ------------------------------------------------------------------------ ----------
  Order   Callable                                                                 Priority
 ------- ------------------------------------------------------------------------ ----------
  #1      Symfony\Component\Mailer\EventListener\MessageListener::onMessage()      0
  #2      Symfony\Component\Mailer\EventListener\EnvelopeListener::onMessage()     -255
  #3      Symfony\Component\Mailer\EventListener\MessageLoggerListener::onMessage()  -255
 ------- ------------------------------------------------------------------------ ----------

"Symfony\Component\Security\Http\Event\LogoutEvent" event
---------------------------------------------------------

. . .

```

Event subscribers

Subscribers

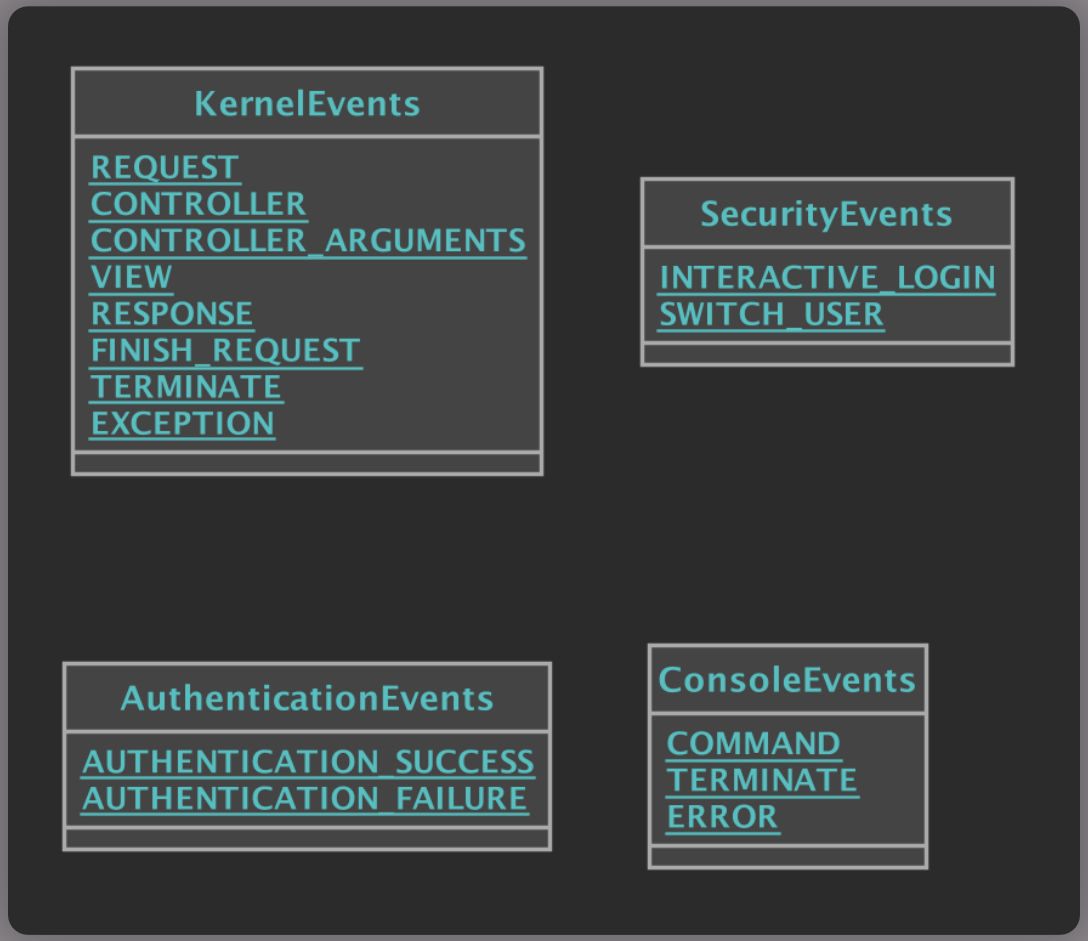
- Way to register several listeners at once
- Requires 0 configuration

Subscribers

```php
<?php

namespace App\Book\Event;

use Acme\Store\Event\BookEvent;
use Symfony\Component\EventDispatcher\EventSubscriberInterface;
use Symfony\Component\HttpKernel\Event\ResponseEvent;
use Symfony\Component\HttpKernel\KernelEvents;

class BookSubscriber implements EventSubscriberInterface
{
    public static function getSubscribedEvents()
    {
        return [
            KernelEvents::RESPONSE => [
                ['onKernelResponsePre', 10],
                ['onKernelResponsePost', -10],
            ],
            BookEvents::PUBLISHED => 'onBookPublished',
        ];
    }

    public function onKernelResponsePre(ResponseEvent $event) {}
    public function onKernelResponsePost(ResponseEvent $event) {}
    public function onBookPublished(BookEvent $event) {}
}

```

Events

Symfony events



Main Symfony events explained

- Kernel events:
  - REQUEST: Filters the HTTP request and allows to return an early response.
  - CONTROLLER: Guesses the controller to call afterwards.
  - RESPONSE: Allows any updates in the HTTP response.
  - TERMINATE: Last tasks remaining after the response has been sent to the user.

- Security events:
  - INTERACTIVE_LOGIN: Triggered when the user manages to authenticate.
  - AUTHENTICATION_SUCCESS
  - AUTHENTICATION_FAILURE
  - SWITCH_USER: Triggered when a user switches to someone else's account.

See more: https://symfony.com/doc/current/components/http_kernel.html

Exercises

1. Store into your database the last connection time of your users.
   - Try to store the last time a user *actually* logs in.
2. Create a new log entry (in the default log file) each time a user orders a movie, thanks to an event listener.

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Resources

https://symfony.com/doc/current/components/event_dispatcher.html

https://symfony.com/doc/current/components/http_kernel.html

About us

We are the **creators of Symfony**. We know the framework and PHP inside out and we can help you.

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SensioLabs Consulting

- We develop **proof of concept applications** to evaluate Symfony for your product.
- We **coach your team** and accompany your company through the development.
- We deliver **expert missions** to help you solve specific problems in your development.
- We help you **migrate** your **legacy** PHP applications.

Our full list of services: sensiolabs.com/en/packaged-solutions

SensioLabs Training

- We provide **general Symfony training** for all levels (Getting Started, Mastering and Hacking) and **specific Symfony training** for testing, performance and internals.
- We provide special Symfony training for your **developers**, including web development and Twig integration.
- We provide training for other **PHP** technologies such as Doctrine and Drupal.

Our full list of courses: training.sensiolabs.com

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